RES4Africa Foundation

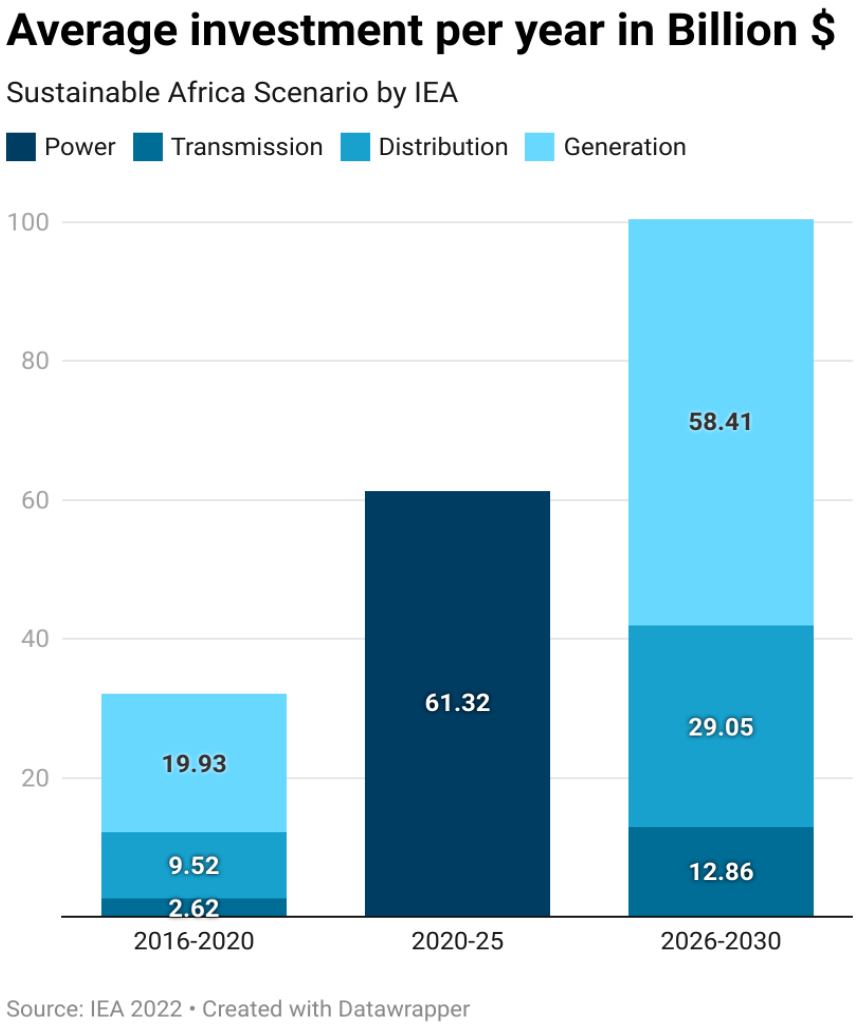
Knowledge Platform

A review of electricity policy and regulatory frameworks in Africa

RES4Africa Foundation and United Nations Economic Commission for Africa (UNECA)

RES4AFRICA FOUNDATION

African power systems are in need of substantial investment



Access to electricity

- ~ 590 million people in sub-Saharan Africa lack access to electricity
- Varied regional picture: South Africa (85% with access) vs South Sudan (7%)

Electricity demand

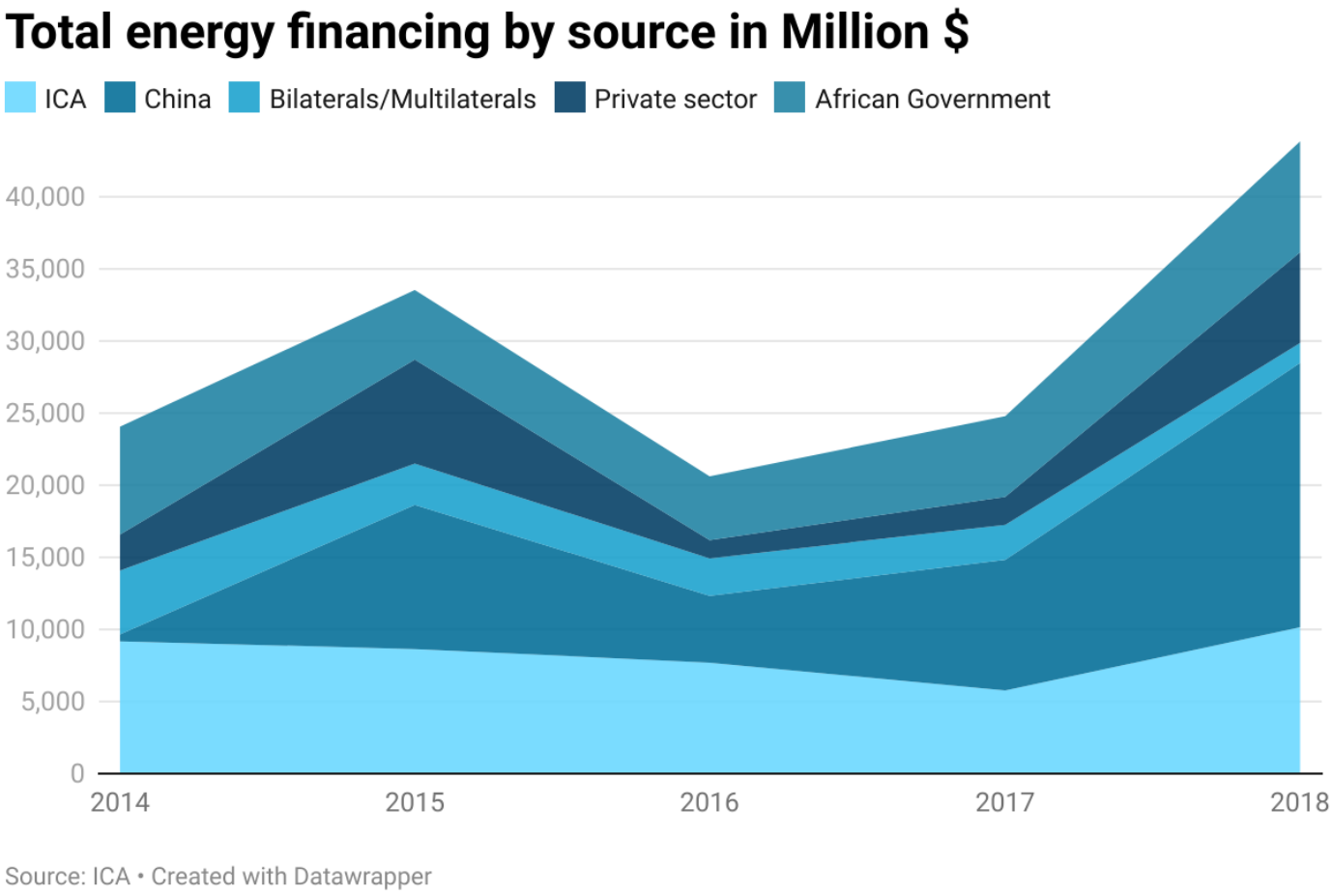
- Today, Africa's electricity demand represents 2% of global electricity demand
- By 2040, electricity demand in Africa is expected to quadruple

Investments

- Estimates of investment requirements in the energy sector of Africa vary; however, most are significant:
  - *€340 billion by 2030 (World Energy Network)*
  - *$90 billion per annum until 2030 (AfDB)*
  - *For power only $100 billion between 2026-30 (IEA)*

So far, finance was mainly from public & multilateral sources

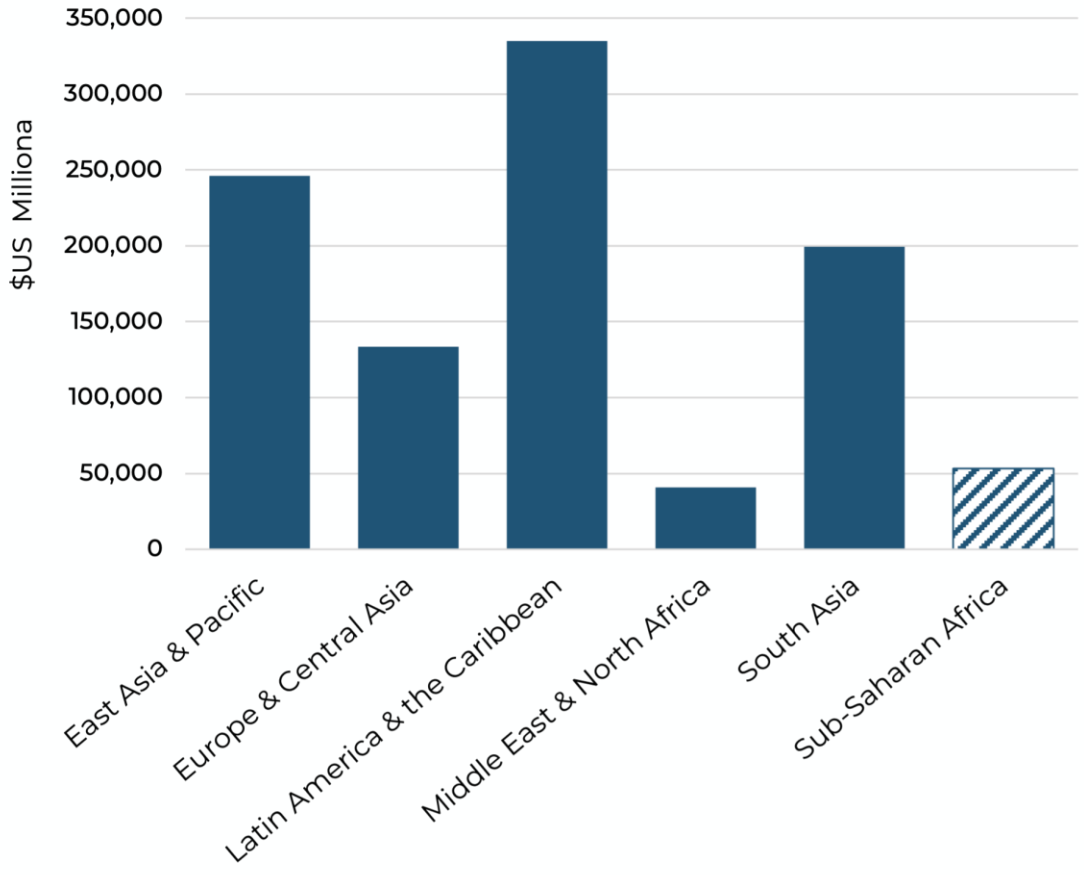
So far, **energy infrastructure finance** has mainly come **from public & multilateral** sources



Finance for energy infrastructure is increasing **but the role of the private sector remains marginal**

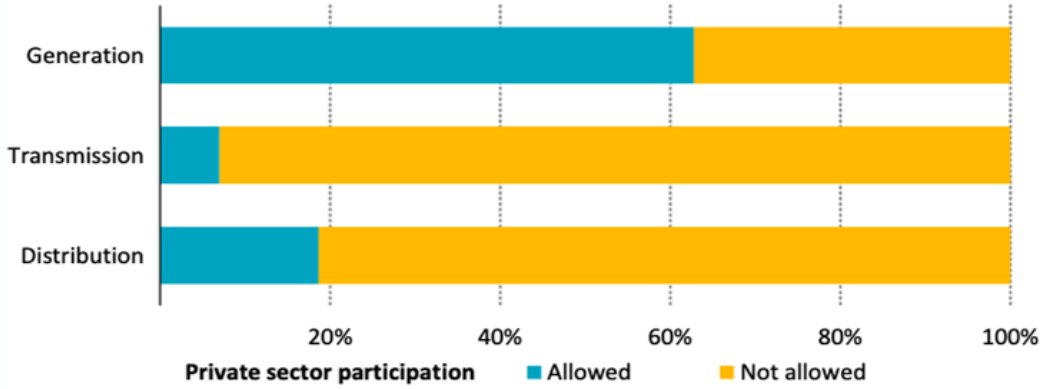
Closing the investment gap requires a much bigger role for the private sector

Private investment in the power sector (1990-2022)



Source: World Bank Private Participation in Infrastructure Database

Private participation in electricity supply in SSA



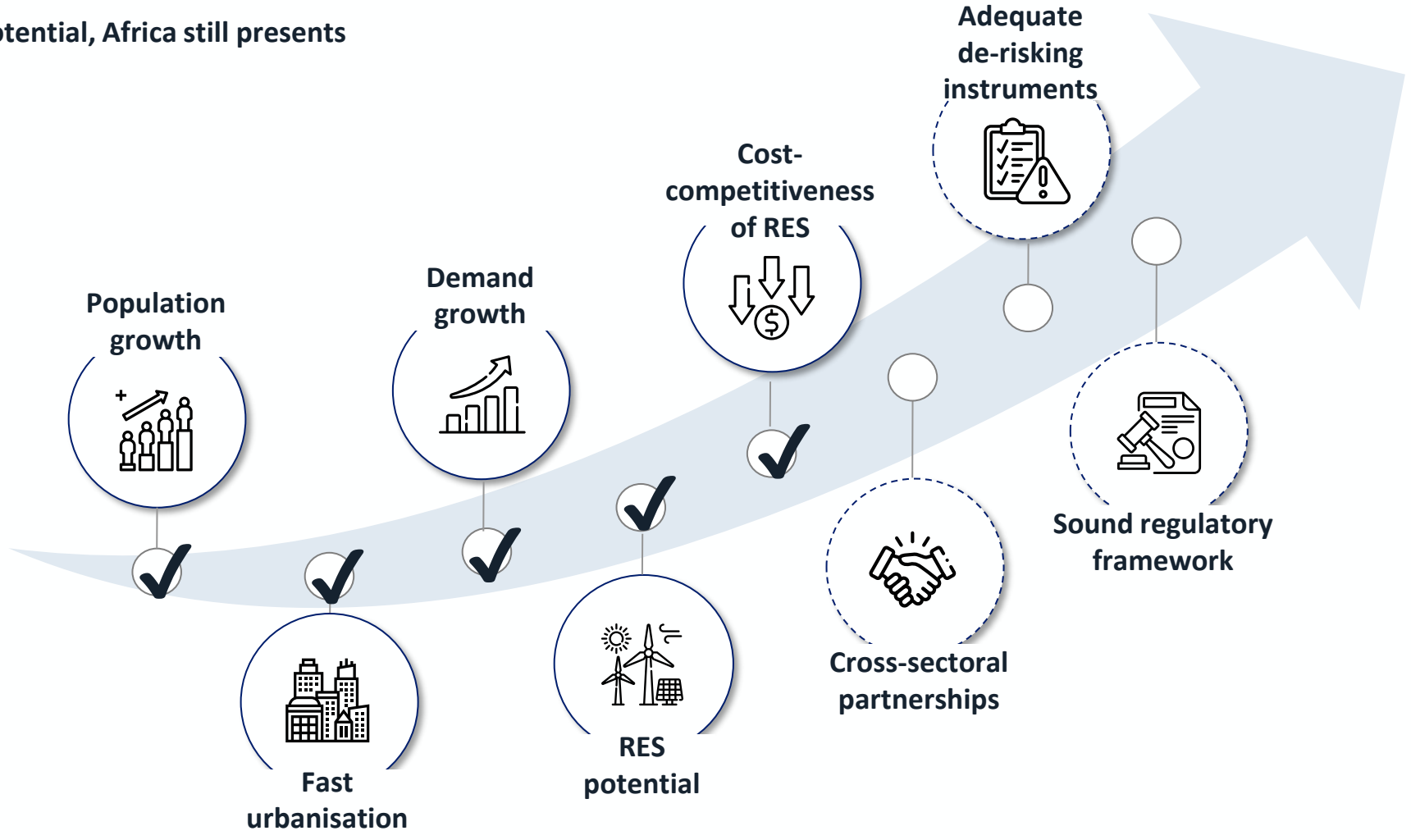
The **regulatory frameworks** of many African countries **do not allow private participation** in certain segments of the electricity value chain

Source: Africa Energy Outlook 2019 (IEA, 2020)

Private investors look for enabling environments

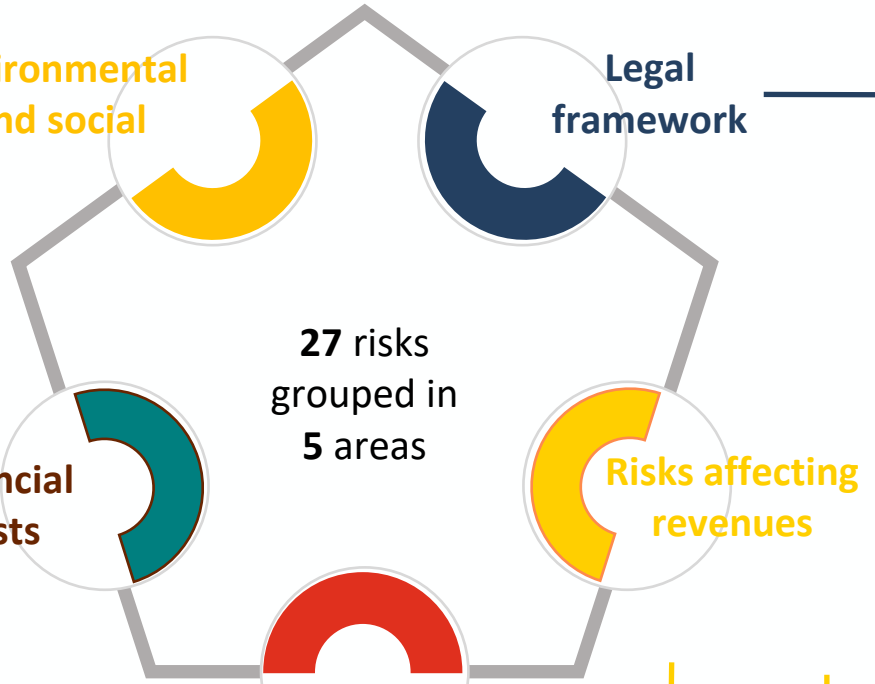
While having an immense market potential, Africa still presents some challenges

- RE investments do not necessarily go where there is the most wind or sun, but often where the best enabling environment is provided
- An enabling environment relies on several factors, some of which Africa has yet to ensure



Comprehensive risk assessment drive investment decisions

- Natural force majeure
- Social acceptance
- Environmental impact assessment procedure



- Political risk
- Dispute resolution
- RES procurement mechanisms
- Transparency & fairness of market mechanisms
- Starting a business
- Legal & regulatory risk
- Grid access rules
- Property/ concession rights
- IPP market access rules

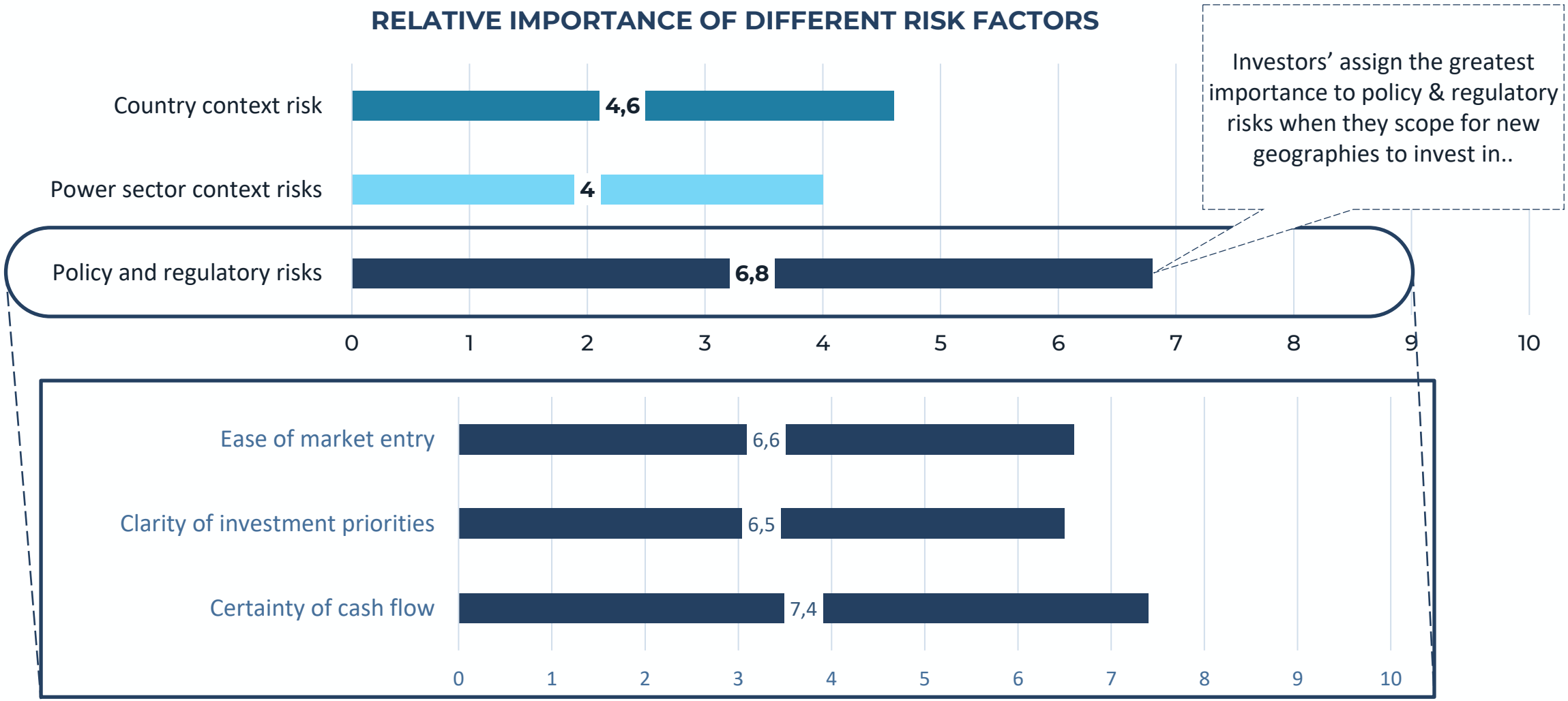
- Financing availability
- Tax regime
- Know-how of local financial intermediaries
- Inflation & currency risk

- Local content requirements
- Land rights
- Adequacy of local technical skills
- Logistics, security, safety risks
- Permitting/licensing
- Construction and O&M flaws

- Counterparty/ sovereign risk
- Breach of contract
- Capital transfer & convertibility
- Curtailment risk

Source: Investor survey (World Bank 2020)

Perceived policy and regulatory risks are a priority



Source: Attracting Private Solutions and Participation in the Power Sector in Sub-Saharan Africa (World Bank, 2020)

Policy and regulatory risks are complex and diverse

Study conducted in 6 SSA countries

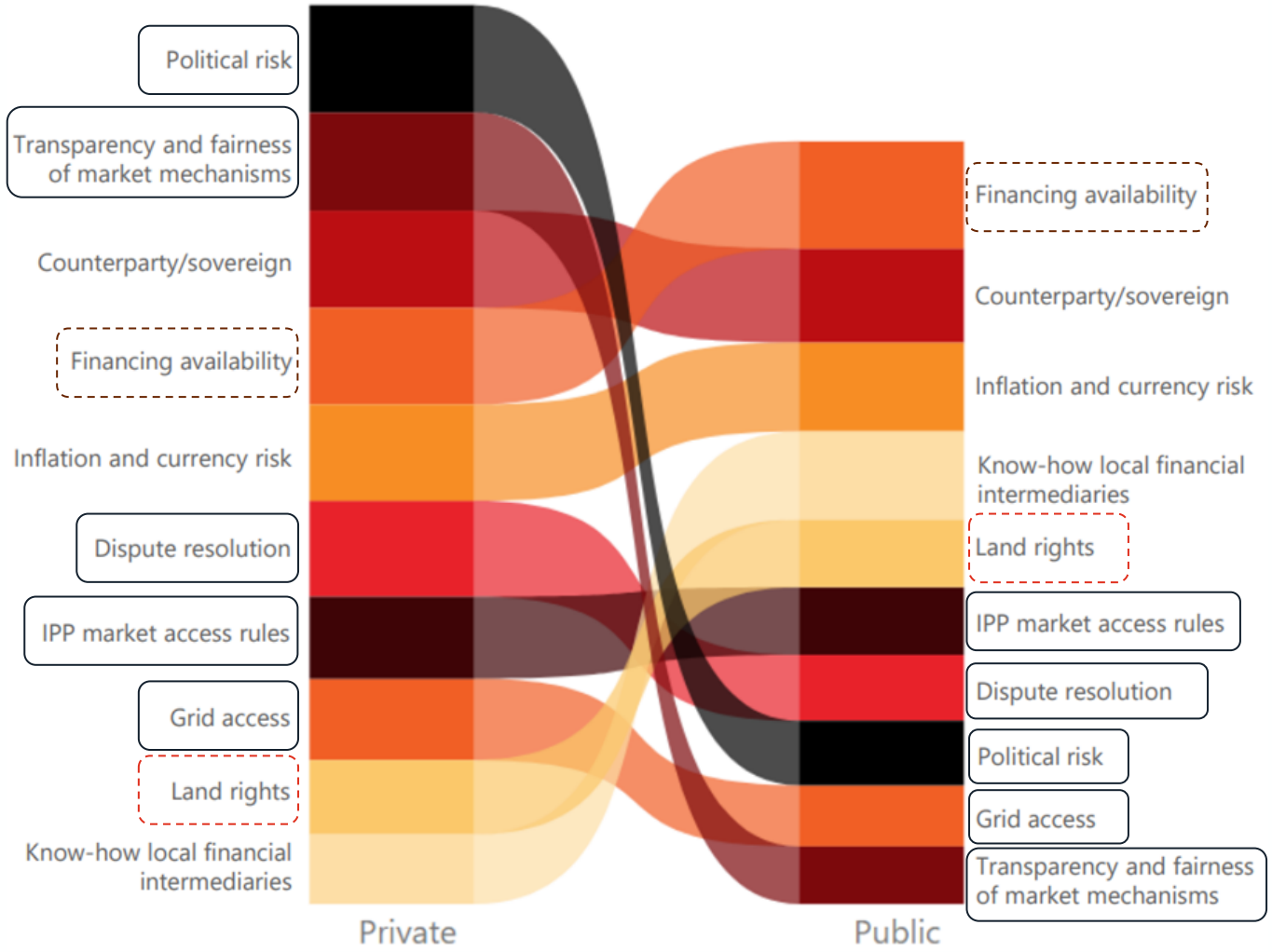
- Côte d'Ivoire
- Senegal
- Kenya
- Ghana
- Ethiopia
- Mozambique

116
survey participants

70%
private sector

30%
public sector

- Industry: **34%**
- Finance: **14%**
- Professional services: **22%**



Source: Investor Survey on Sub Saharan Africa – A survey on the risks to renewable energy investments (RES4Africa, 2021)

Policy and regulatory risks are complex and diverse

MAIN RISK CATEGORIES

COUNTRY CONTEXT RISKS

Capture the wider governance and political environment, the macroeconomic framework, general access to international finance…

+

POWER SECTOR CONTEXT RISKS

Factors related to the wider sector context, including track record of private solutions, growth of demand and supply, and private investors' own track record in the sector

+

POLICY AND REGULATORY FRAMEWORKS

Policy and regulatory risk factors, including the ease of market entry and exit, the clarity of investment priorities, and the certainty of cash flows

POLICY & REGULATORY RISK FACTORS

EASE OF MARKET ENTRY	Risks related to licensing, infrastructure procurement and tendering, and the legal framework determining investors' ability to enter the market
CLARITY OF INVESTMENT PRIORITIES	Risks related to government plans for electrification, generation and network expansion and required technical standards
CERTAINTY OF CASH FLOW	Risks related to cost recovery and investment returns, ability to enforce payment, and government incentives & support schemes

and potentially add…

OPERATIONAL STABILITY	Risks related to technical aspects as for infrastructure system integration, access to networks, dispatch, etc.

They can be found along all the entire project life-cycle and affect the investment process along the way

KEY POLICIES & REGULATIONS

Market governance	How is the market structured?
Project governance	Under which regime shall the asset operate?
Planning	How is the asset development plan structured?
Tariffs and Incentives	Do current tariffs and potential incentives ensure viability?
Permits	How to get the necessary permits and authorizations?
System integration	Is the correct implementation & efficient integration of the asset in the system ensured?

Investment decision

Availability of business models and market potential	**Market scouting**
Agreement with the Authority for energy sale, pricing and metering system, tariffs	**Energy off-taking**
Procedures for project official approval and licenses to operate	**Licenses issuing**
Identification of strategies for funding (direct funding, credit, incentives)	**Financing**
Plant construction, testing phase, start-up, operation and maintenance	**Construction, O&M**

PROJECT RISKS

Effective policy criteria for private sector participation

Power Sector Structure & Governance

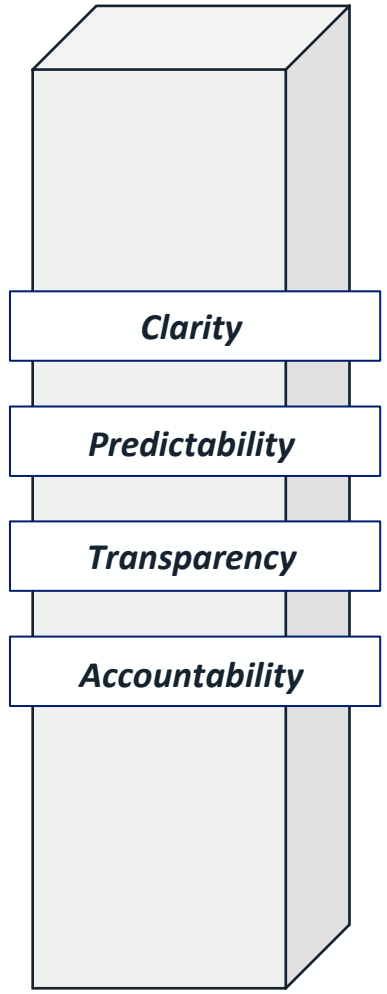
Policies, laws and regulations defining energy policy strategic priorities, and regulating market entry, infrastructure planning, sector governance, market structures, and infrastructure procurement

Sector Economics

Laws and regulations that ensure the economic viability of electricity infrastructures investments, as well as a fair competition among market operators

Sector Maturity

Technical regulations meant to ensure a correct implementation and an efficient integration and management of electricity infrastructures



POLICY & REGULATORY EFFECTIVENESS FOR PRIVATE SECTOR PARTICIPATION

- **OPENNESS** ✓
- **ATTRACTIVENESS** ✓
- **READINESS** ✓

R.O.A.R. approach assesses the effectiveness of electricity sector regulation highlighting gaps

- A comprehensive analytical framework to assess key aspects of policies and regulations
- Developed by R4A and UNECA with the support of international policy and regulatory experts
- Implemented to assess policy and regulatory frameworks in 16 African countries

Openness

To **what degree the market is accessible** and evolved?

Sector structure & governance

Attractiveness

Could the **investment be profitable?**

Sector economics

Readiness

Could the asset be integrated and operated **within electricity system?**

Sector maturity

Openness dimension

The degree of market *openness* is the first element evaluated by investors when scoping for investment opportunities

Electricity Sector Strategy

Energy policy & targets

System Planning

Generation and network expansion plans & resources mapping

Power Sector Governance

Market governance, operational regimes & regulatory authority

Power Sector Framework

Unbundling of the electricity service value chain

Private Sector Participation Models

Ownership models for private investors

Power Sector Competition

Degree of competition within the market

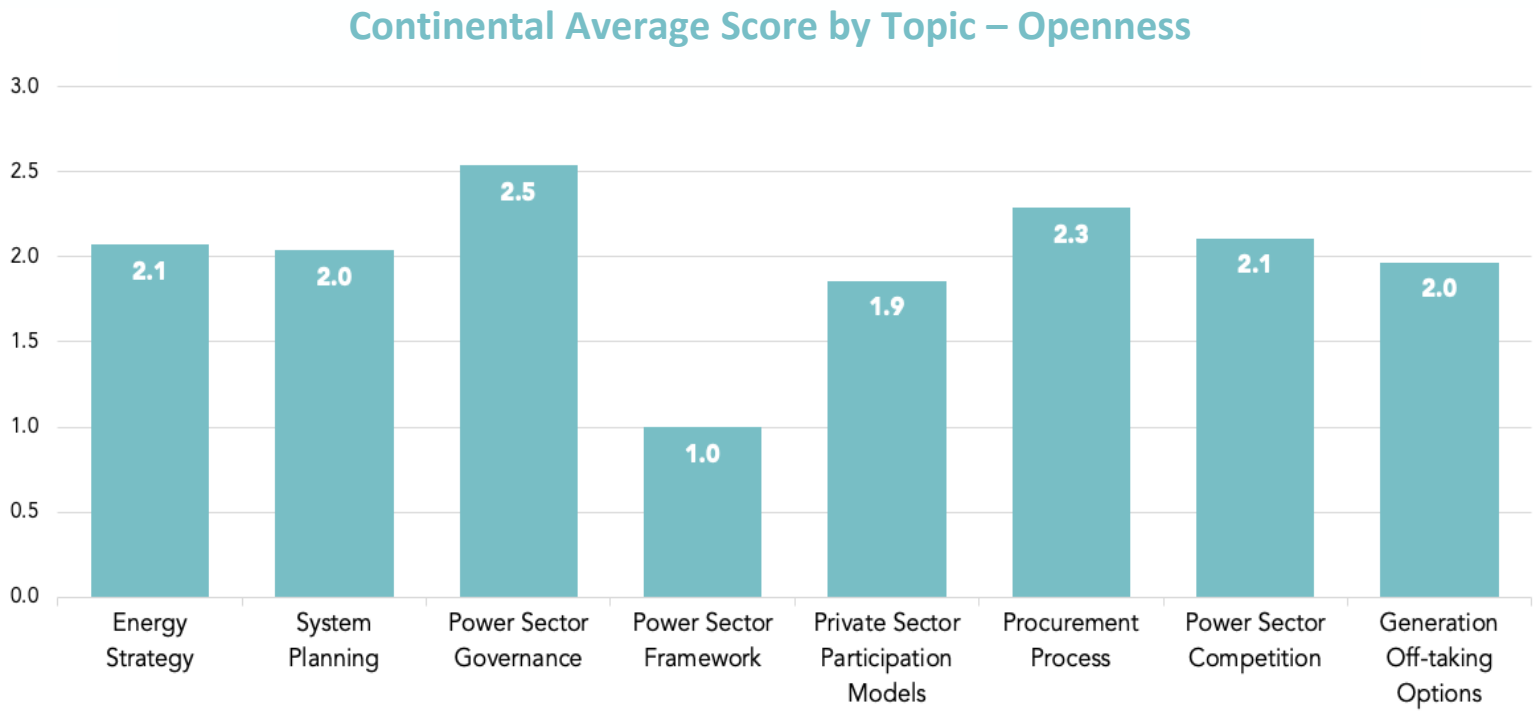
Generation Off-taking Options

Business and commercial models

Procurement Process

Public infrastructures procurement governance

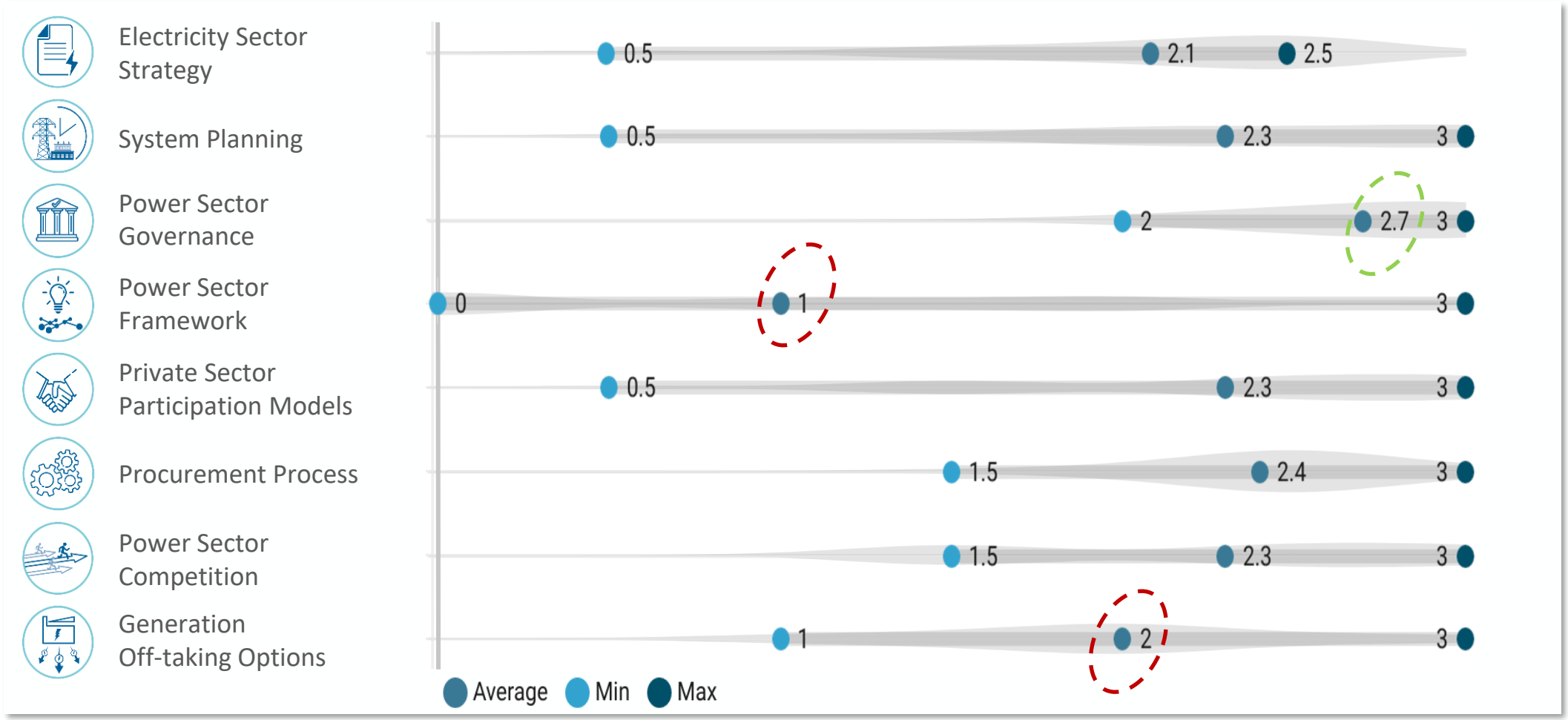
Regulatory openness of electricity markets in Africa



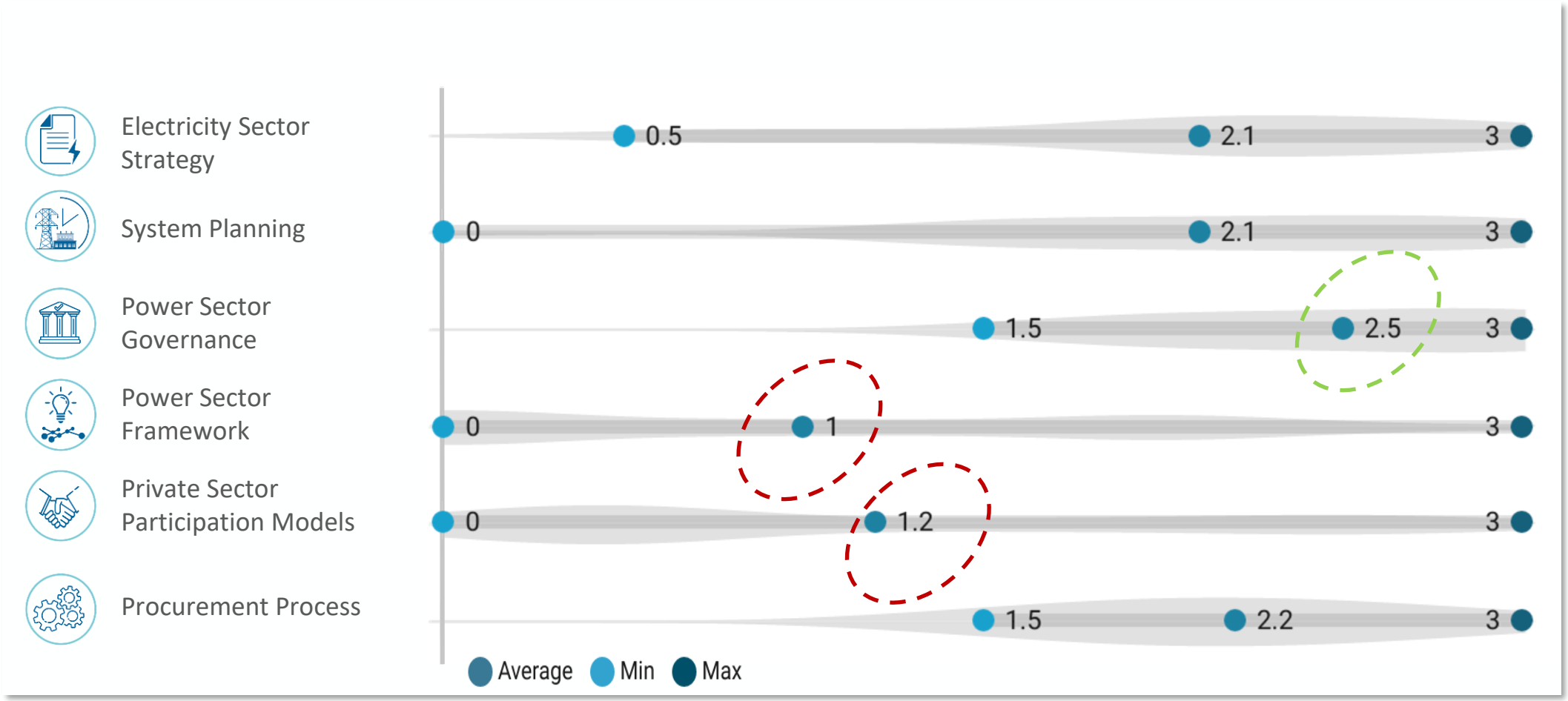
- Good definition and visibility of energy policy targets (i.e. access, RE-development)
- Increasing independence of sector governance
- Dominance of vertically integrated monopolies or insufficient unbundling
- Limited ability of private entities to participate in transmission & distribution

0 = lack of regulatory preparedness
3 = full regulatory preparedness

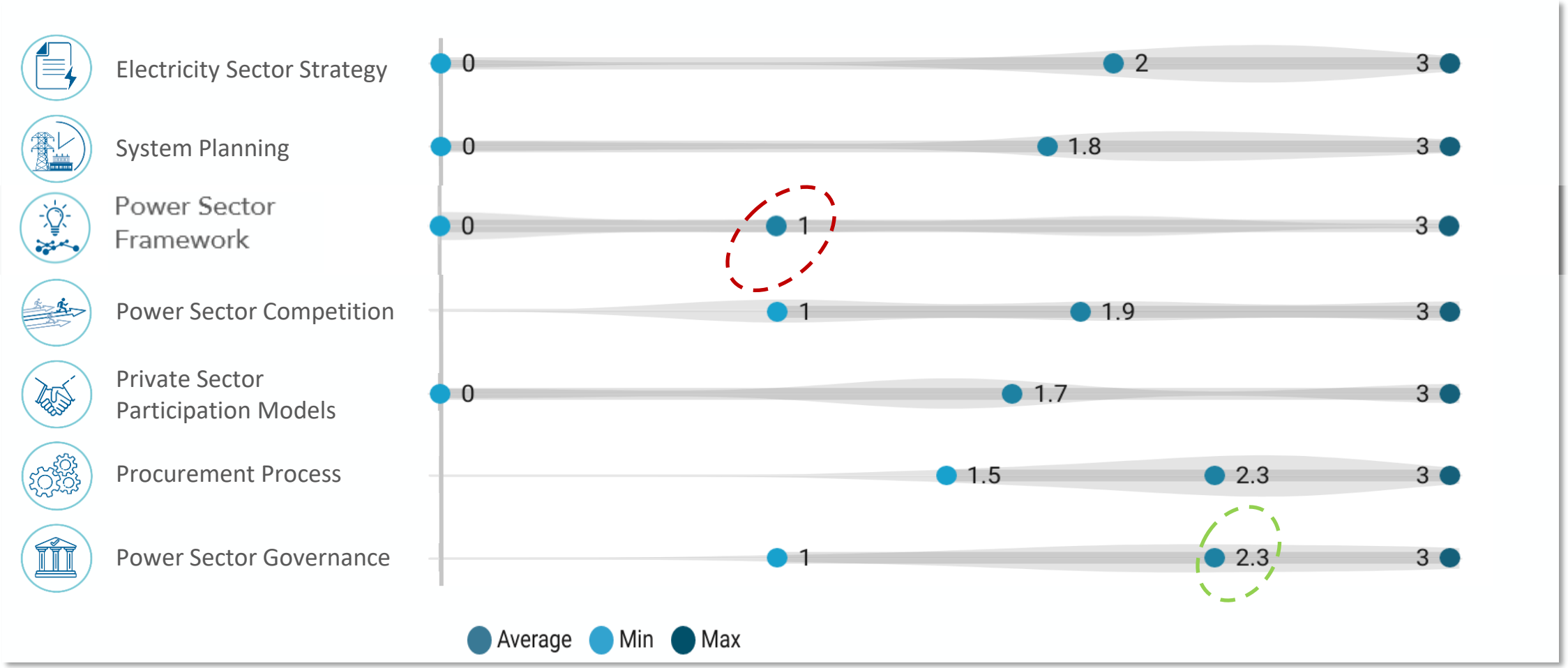
Analysis of regulatory Openness in the Generation segment



Analysis of regulatory Openness in the Transmission segment



Analysis of the regulatory Openness in the Off-grid segment



Establish a level playing field for market players

Power Sector Framework

10/16 countries * are still characterized by vertically integrated utilities, monopoly of certain services and constrained private sector role

- Independent transmission system operator
- Legal right to access to electricity networks for all potential users
- Primary legislation to define market participants obligations and rights to operate
- Clear legal framework for electricity infrastructure procurement

*Countries scoring ≤1.5 in our regulatory review

Attractiveness dimension

The attractiveness of market conditions and a market's ability to ensure the long-term financial viability of assets is the second dimension considered by investors when evaluating a new market

Contracts Regulation

Contracts administration and essential clauses

Economic Regulation

Tariff setting responsibility, principles and process

Incentives

Green certificates, Feed-in-Tariffs, RES-specific auctions

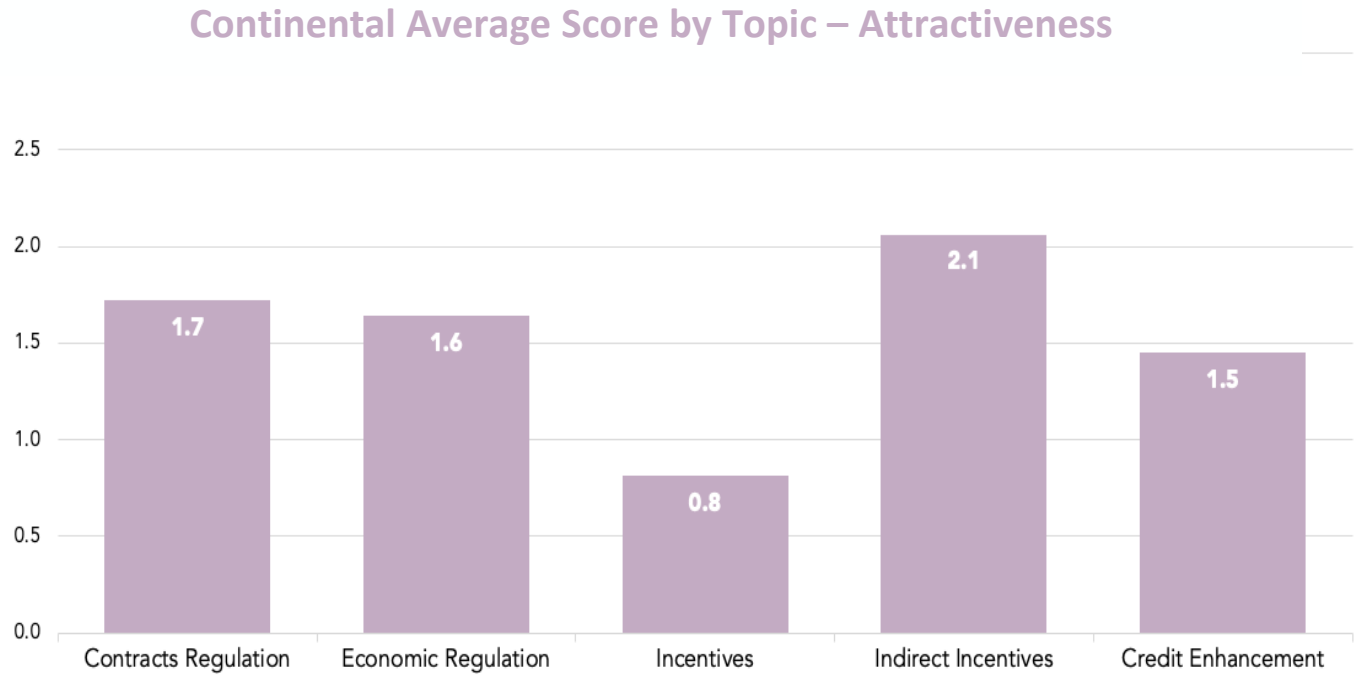
Indirect incentives

Duties exemptions and tax relief, carbon tax, etc.

Credit Enhancement

Lending agreements or guarantees

Regulatory attractiveness of electricity markets in Africa



0 = lack of regulatory preparedness
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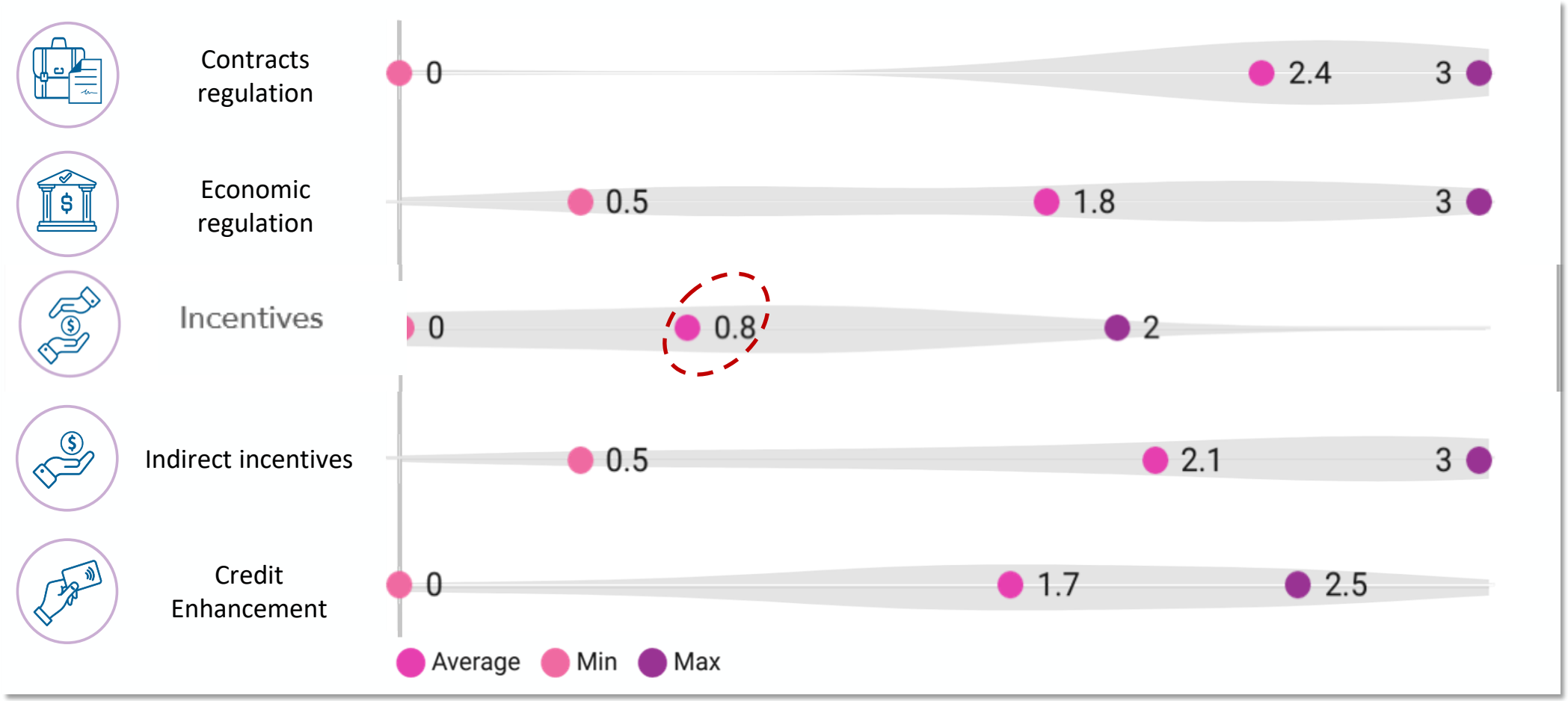
- Advanced contract standardisation for generation investments (i.e. PPAs)
- Insufficient contract regulation to determine rights and obligations of network operators
- Lack of transparency of tariff methodologies and predictability about their review periods
- Incentives only available on a project-by-project basis

Analysis of regulatory Attractiveness: Generation Segment



Define incentives to Promote Electrification & Decarbonization

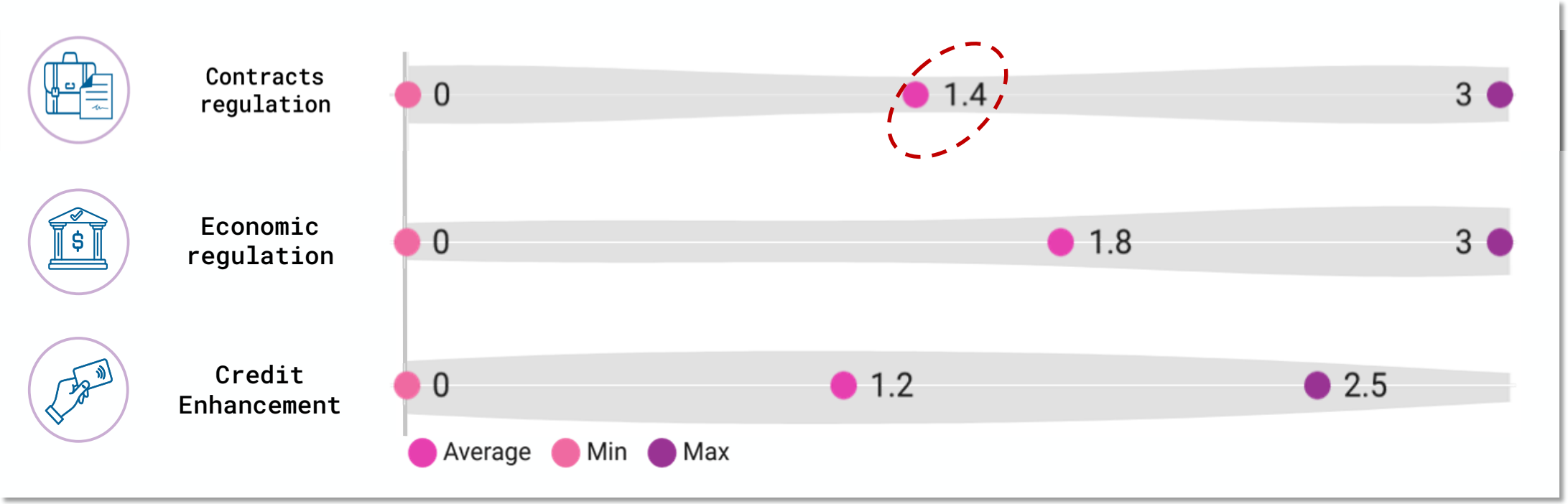
15/16 countries lack comprehensive regulatory frameworks to support renewable energy deployment*

Some of the analysed countries have adopted **best practices** such as:

- Financial incentives designed to align with policy targets & market realities
- Competitive processes for granting financial incentives
- Performance-based incentive mechanisms for utilities

*Countries scoring ≤1.5 in our regulatory review

Analysis of Regulatory Attractiveness: Transmission Segment



Establish effective Contracts Administration

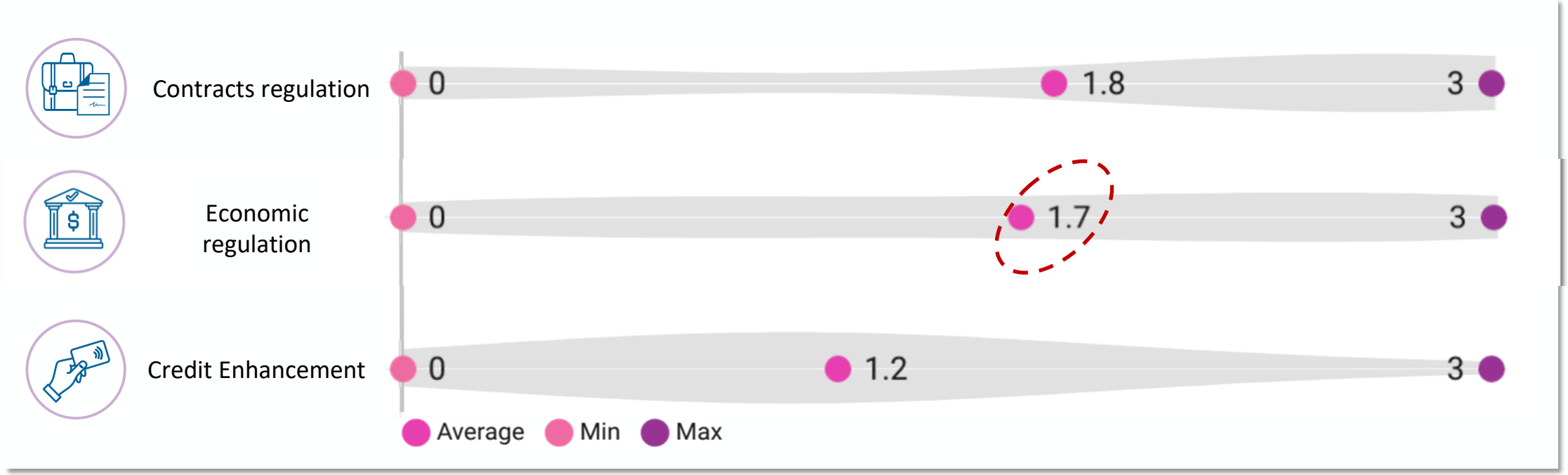
Contracts regulation

7/16 countries* demonstrate a lack of transparency regarding the terms of key sector contracts (Transmission Service Agreements, concessions) and present possible red tape in contract negotiation

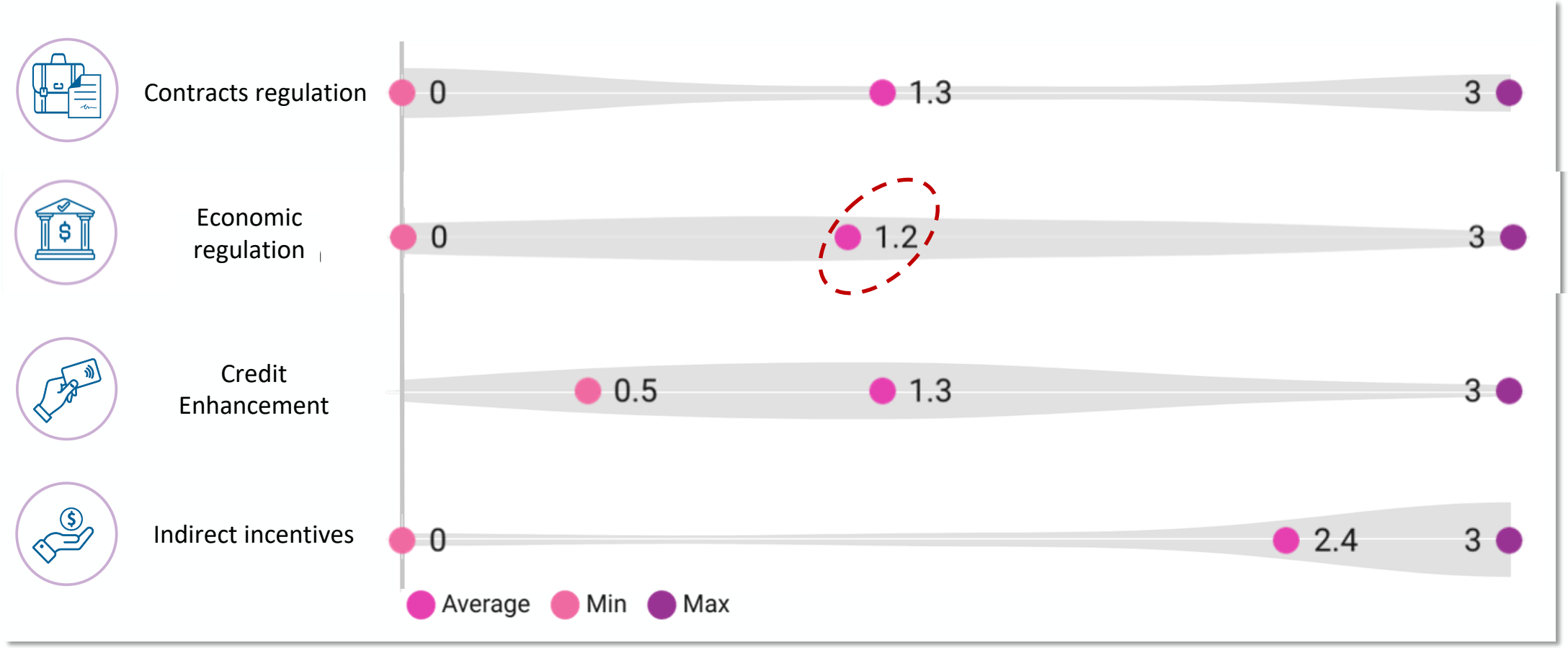
- Clarity on rights and obligations, performance requirements & remuneration
- Transparency on contract review and approval process
- National regulator involved in the approval of contractual terms

*Countries scoring ≤1.5 in our regulatory review

Analysis of Regulatory Attractiveness: Distribution Segment



Analysis of Regulatory Attractiveness: Off-grid Segment



Create Conditions for Long-term Financial Viability of the Sector

Economic regulation

7/16 countries* lack transparent electricity tariff regulation

- Effective cost recovery as a core objective of tariff policy
- Detailed and transparent tariff methodologies and tariff setting process
- Frequency of tariff review and updates defined by law
- Dedicated tariff policies for mini-grids

*Countries scoring ≤1.5 in our regulatory review

Readiness Dimension

Authorisations & Permits

Land access, environmental permits and one-stop-shop

System Planning

Network Development Plan

Grid Code

Access to network, system operation rules & ancillary services

Grid Access

Grid connection and operation agreements

System Quality and Security Standards

Quality and security standards for networks

Mini-grid Integration

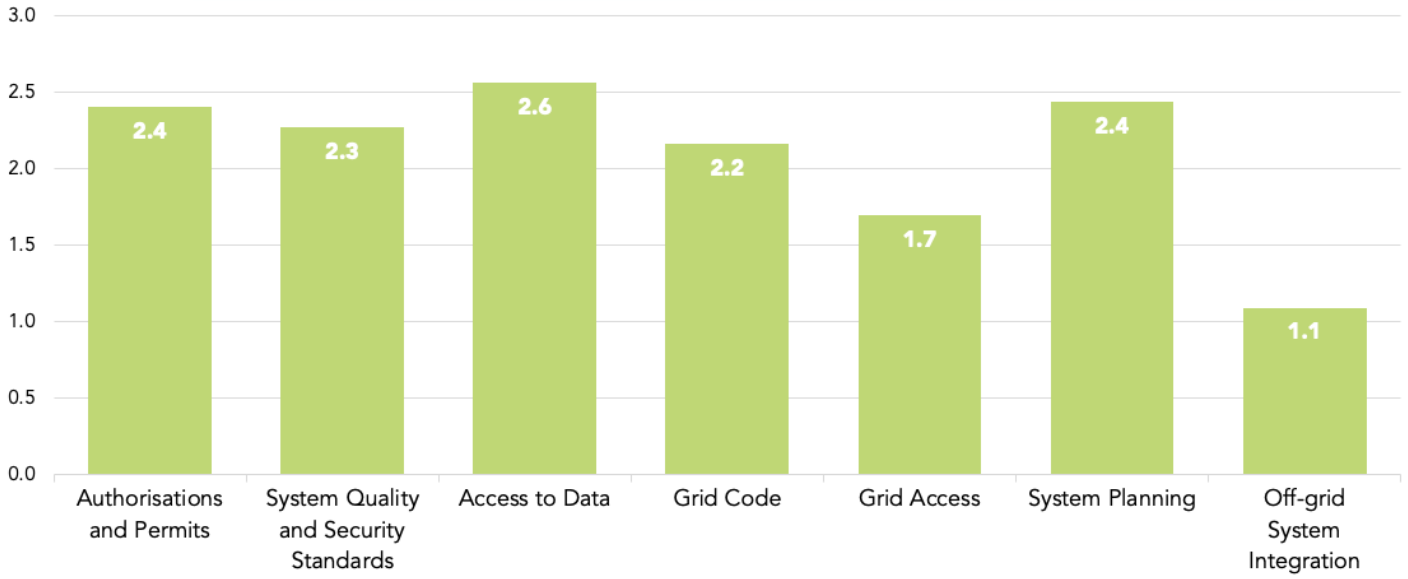
Regulation for off-grid arrival

Access to Data

Public availability of data

Regulatory readiness of electricity markets in Africa

Continental Average Score by Topic – Readiness

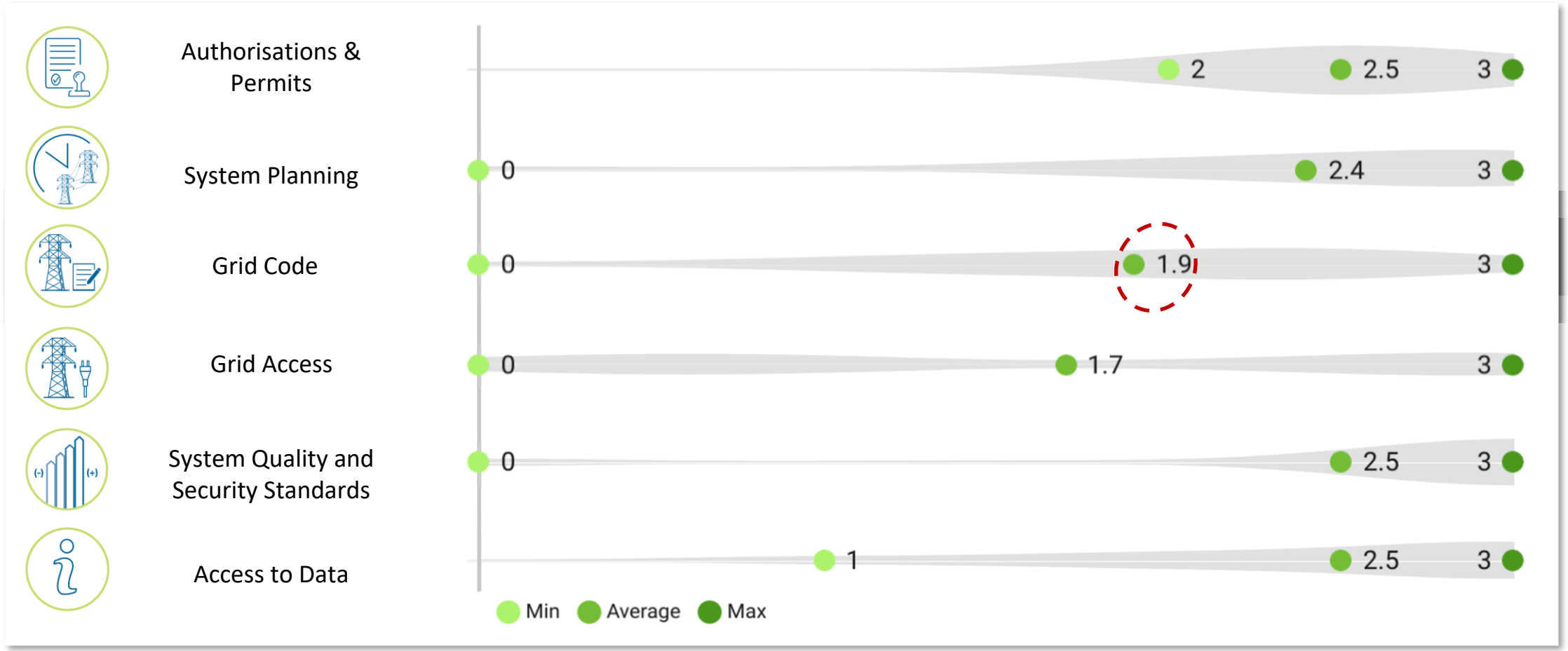


0 = lack of regulatory preparedness
3 = full regulatory preparedness

- Improved regulation that coordinates and supervises electricity system planning
- General improvement of technical regulation & grid access even if wide differences persist across countries
- Lack of regulation for off-grid system integration
- Improving transparency on market data but still limited availability on system reliability and service quality

*Countries scoring ≤1.5 in our regulatory review

Analysis of Regulatory Readiness: Generation Segment



Establish system development and operation rules

Grid Code

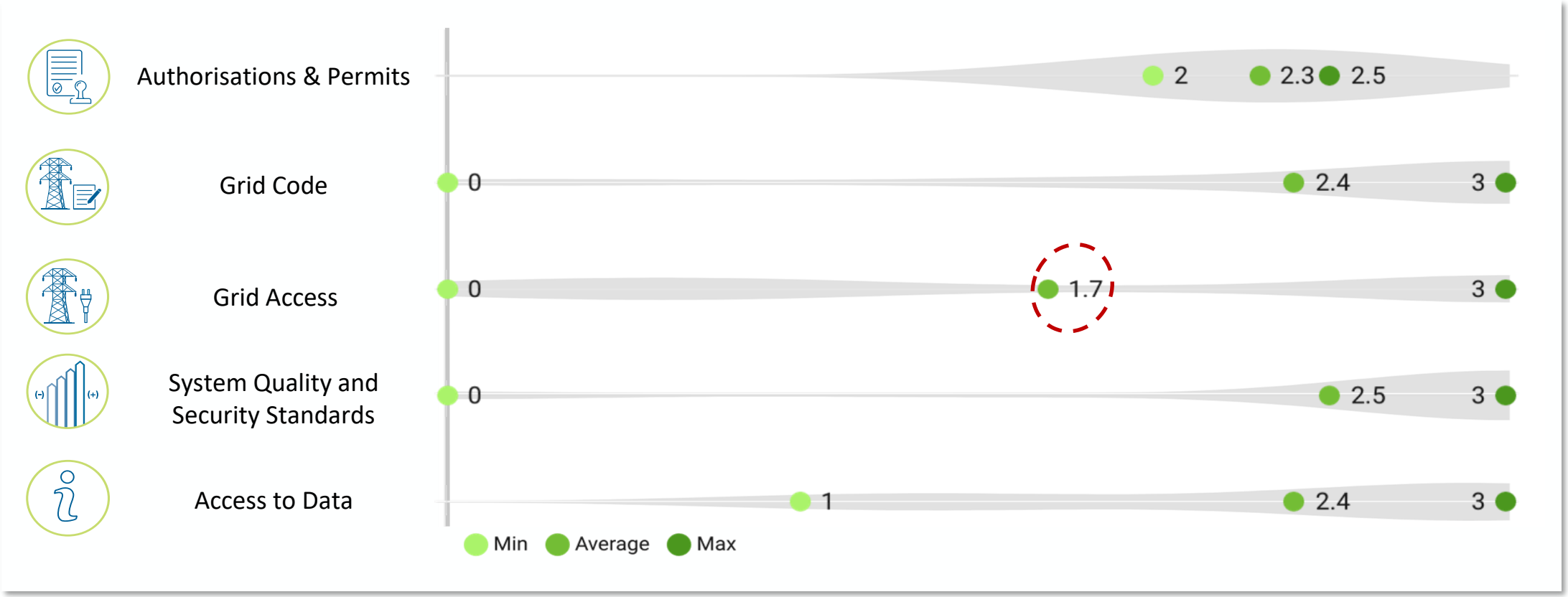
6/16 countries* lack or have incomplete grid code regulation and lack transparent rules for market operation and dispatch

2/3 of the reviewed countries shows good practices in dealing with grid code regulation by:

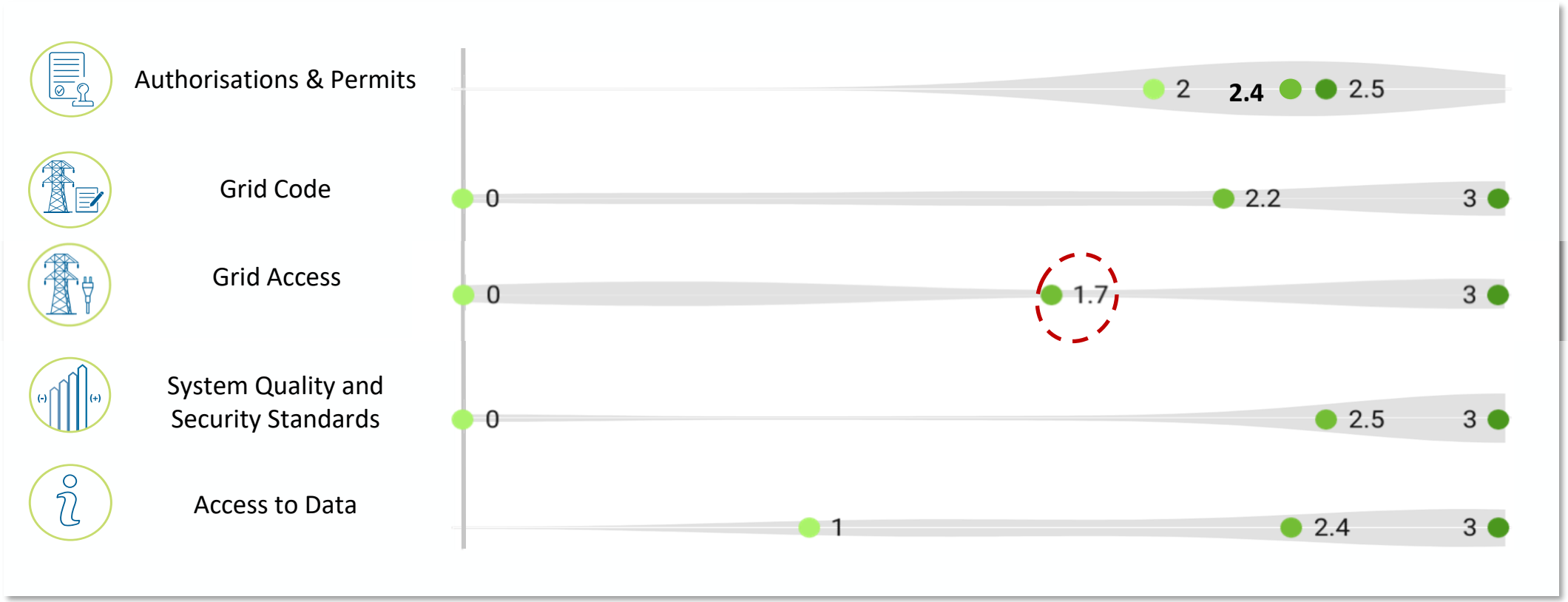
- Mandate responsible authority for grid code development
- Adopt and enforce, connection, operation and planning sub-codes
- Appropriate requirements for VRE plants integration
- Monitor compliance with grid connection codes

*Countries scoring ≤1.5 in our regulatory review

Analysis of Regulatory Readiness: Transmission Segment

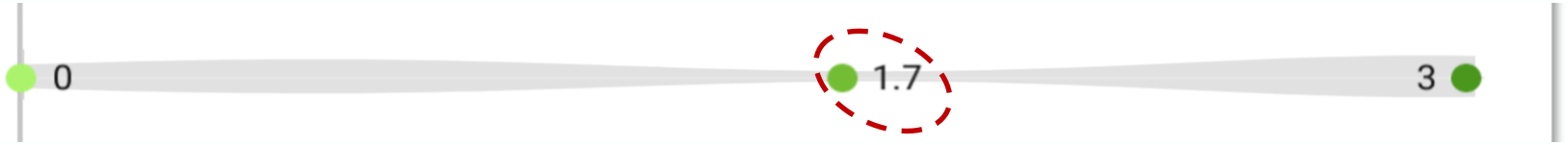


Analysis of Regulatory Readiness: Distribution Segment



Ensure open access and integration to the grid system

Grid Access



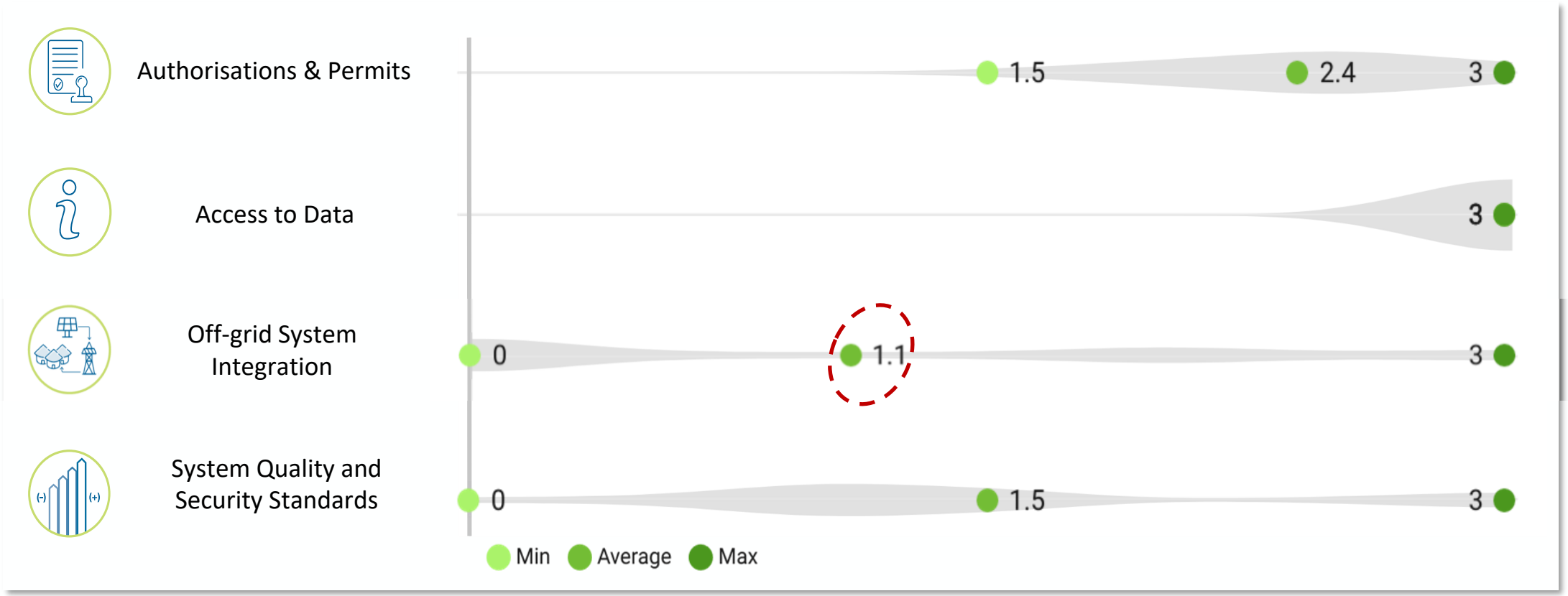
Grid access is a challenge in **8/16** countries* due to lack of clarity on responsibilities and cost allocation related to grid connection and on tariff conditions for access and usage of the grid

40% of the countries adopted exhaustive legislation concerning grid access based on:

- Non-discriminatory third-party access to networks
- Streamlined grid connection process
- Standardised system access contracts
- Consultative transmission network charge setting

*Countries scoring ≤1.5 in our regulatory review

Analysis of Regulatory Readiness: Off-Grid Segment



Analysis of Regulatory Readiness: Off-Grid Segment

Off-grid System Integration

10/14 countries lack regulation for off-grid system integration, thus increasing the risk of stranded assets and the uncertainty around off-grid investments*

Some pioneer countries adopted legislation offering long-term integration options for off-grid systems:

- Comprehensive master plan for electricity infrastructure development
- Define technical standards for mini-grid integration with main network
- Establish commercial models for mini-grid operators in case of grid arrival

*Countries scoring ≤1.5 in our regulatory review

ROAR supports the development of a blueprint for advancing policy & regulatory reform towards increased power sector participation in electricity infrastructure

Scaling-up private sector investment in Africa's electricity value chain

	Creating competitive electricity markets	Delivering economically attractive electricity markets	Ensuring accessible and secure electricity systems
Specific objectives			
Operational objectives	Establish a long-term strategy for sector development	Secure revenue streams for investors	Ensure reliability and quality of electricity supply
	Guarantee independent sector governance and accountability	Create conditions for long-term financial viability of the sector	Streamline investment process
	Ensure a level playing field for investors	Define incentives to promote greening of the sector	Guarantee transparency
	Create multiple routes to market	Address existing market failures	Assure fair access to electric systems

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